

HIFI MAINTENANCE

AN OUNCE OF PREVENTION

When you went out to buy your stereo system, chances are you did some homework first. You read up on which amplifier was best, how to select the right turntable, even took a crash course in listening to loudspeakers. When you made the purchase, you parted with a fair chunk of cash for a system you could be proud of.

Now that you've had it a while, doesn't it make sense to take the best possible care of it you can, to keep it in top operating condition, and to let it look its best? Especially when it's easy to do, and when it may save you a considerable amount of money later on in repairs.

RECORDS: DO THE DISCO-REACH

The biggest favor you can do your records is to keep them clean. You can do that by taking them off the turntable and putting them back in their jackets when you are not using them. You'll find that those paper sleeves used by most of the record companies to advertise their new releases help keep records clean, so don't throw them away. Polyethylene-lined envelopes or polybags contoured to fit your records are even better. These not only keep dust out of the jacket, but absorb dirt and grit. Eventually, you'll have to throw them away when they become grit-filled—but remember that the dirt they

HANDBOOK

catch isn't hurting your records.

Don't finger your records. Fingerprints contain oils which hold dust. Instead, learn to use the disco-reach to remove records from their jackets. Hold the jacket with record parallel to the floor, pressed between your left hand and your gut, with the opening at the right. Bow the jacket and tilt the open end down slightly, so that the record slides out. To catch it,

A tone arm, cartridge and stylus can wreak unbelievable havoc. If the stylus is worn, it may be chiselling high frequencies out of your record grooves, instead of reproducing them. A cartridge which is tracking too heavily tends to press downward on the groove walls with unbelievable force, while one that tracks too lightly rattles around in the groove, sometimes bouncing out. Both mean unnecessary record



use your right hand, palm up. the heel of your thumb should stop the record edge and your middle fingers contact the label and center hole so that you never touch the playing surface. Once you've disposed of the jacket, use the heels of both palms to transfer the record to your turntable. When you put the record away, simply reverse the process.

wear. So it makes sense to buy the best tone arm-cartridge combination you can afford, and to be sure that they're properly matched.

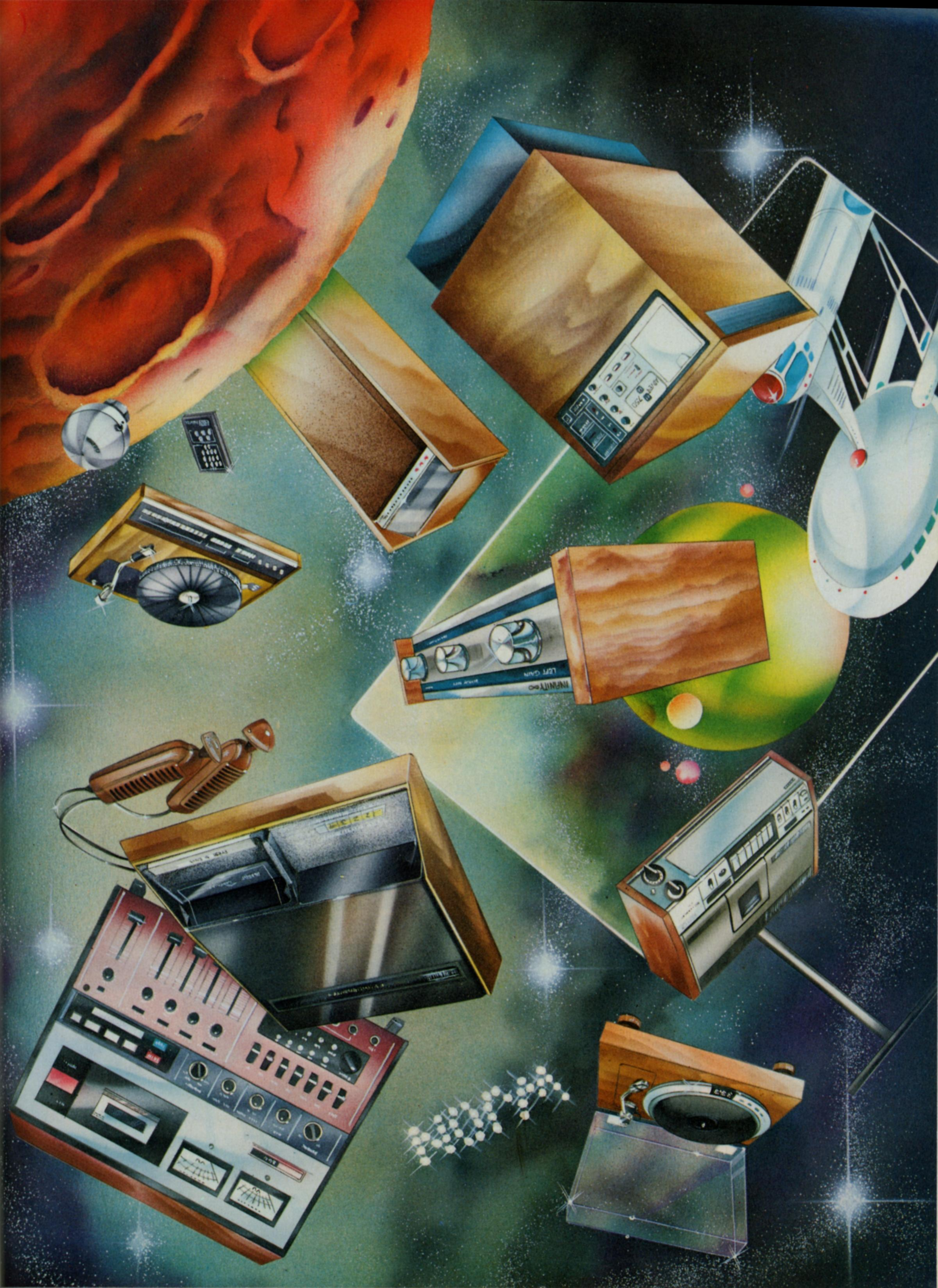
What can you do if, despite your best efforts, your records still get dirty? Clean them, of course. No matter how careful you are, they're going to need cleaning eventually. Fortunately for you, there are a number of good

record care products now on the market to help you do the job. There are brushes and wands, antistatic fluids and cleaners. The oldest name in the business is Cecil Watts, the man who did most of the basic research on record dirt. Altogether, there are eight Watts record cleaning products, including distilled water, to wash records without leaving a mineral residue.

The newest record care product is Sound Guard, a product of Ball Corporation, which has already earned the endorsement of some pretty cynical critics. The kit includes a bottle of record preservative, a deep-pile brush and a spritzer. Besides cleaning, Sound Guard adds a non-silicone lubricant to the record surface. And there's Disc-washer, another friction reducer and cleaner, plus a new application method. There are literally dozens more, some very similar to these sold under other brand names.

Would you believe that playing your favorite record twice in a row is also one of the unkindest things you can do to it? The reason is that as the stylus passes through the groove, it causes the walls to stiffen and become brittle.

Then, when it passes by a second time within a short period, it breaks off little bits of vinyl. Just how long you should wait between playings is a matter for the experts, with opinions ranging from 30 minutes to 24 hours. Many experts feel that a wait of a couple of hours is necessary for the vinyl to regain all of its plasticity following a playing.



DO NOT SIT ON YOUR TURNTABLE

When the manufacturer of a turntable or cartridge supplies you with a protective device like a plastic dust cover or stylus guard free of charge, he's trying to tell you something. What he's saying is that your turntable and stylus will last longer and perform better if you protect them when they're not in use. Not all cartridges come with protectors, unfortunately; and in some cases, the price of a dust cover for your turntable may be extra. Pay it. It's much cheaper than the service charge for cleaning, oiling and tuning up a turntable which has developed speed irregularities or other idiosyncracies. Having bought the dust cover, use it. It not only protects the platter, your records and the internal works of the table, but it looks nice when the unit isn't in use.

Some manufacturers advise you to lubricate the mechanism or motor once every year or two, while others insist that you bring your unit back to them for servicing. Unless the instruction book supplied with your turntable specifically suggests lubrication and specifies the type of lubricant to use, don't attempt it. Read what the instruction book has to say on the subject, and follow that advice exactly.

No matter how great a cartridge you bought, sooner or later you're going to have to replace the stylus in it. If you don't, that diamond tip is going to turn into a chisel and do horrible things to your records. The time to start thinking about this is after approximately one year of average use—that is, two to three hours a day. Many

audio dealers maintain microscopes which enable you to inspect the stylus tip yourself. If the tip looks symmetrically rounded and free of sharp edges, take the stylus home and continue using it for another month or two. If not, buy yourself a replacement. If the stylus is subjected to rough treatment before the year is up—being dropped on one record after another, or if somebody sits on your tone arm while it's playing—better

can tilt the turntable platter. The result is a precision instrument shot to hell.

TAPE SHOULD FOLLOW THE LEADER

Dirt can be just as harmful to your tape cartridges and cassettes as it can to records. That's why manufacturers supply cardboard or plastic shields for the business end of cartridges, and boxes for cas-



check the tip right away.

Even if you've followed the manufacturer's instructions about balancing the tone arm and setting the tracking force, it's a good idea to buy yourself a gram scale and check the tracking force from time to time. Not all arm balancing systems are entirely accurate, and it is possible for arms to get out of balance on their own.

How anybody can do anything so thoughtless, I can't imagine. But people have been known to pile books or other heavy objects on uncovered turntable platters. If the weight is heavy enough and left on one side or the other long enough, it

settes. If you've lost some, or if some of your cartridges or cassettes didn't come in boxes to begin with, rush out right now and buy some. Put the tapes away so that dirt won't get inside the shell where it can gum up the works. Dirt in the business end of a cartridge or cassette not only can jam the cassette, but may be passed along on the tape to the head, where it can cause excess wear.

Although more expensive cartridges and cassettes use plastic which isn't supposed to be affected by normal heat, sunlight can be more harmful to tape than to records. Cheaper cassette and cartridge shells can warp

in temperatures which sometimes climb to 150 degrees or more. A steam radiator on which you've piled a few tapes until you can put them away can have the same effect in wintertime.

Magnetic fields, such as those around big loudspeaker magnets or the transformers in stereo receivers, may not mean much to records—but they can damage a tape recording by partially erasing the tape or by adding hum. So can a heavy-duty power line running along the back of your tape storage shelf. Be sure that your tapes are always clear of magnetic fields. That means never stacking on top of your receiver or a big loudspeaker.

Dirt isn't much of a problem with open-reel tapes. But end-of-tape damage is. Why not kill two birds with one stone by splicing about two feet of polyester or paper leader tape at each end of your reel recordings? Some blank tape manufacturers now supply their reels with leader tape already in place. My preference is for a leader like Scotch because you can write on it, identifying the contents of the tape.

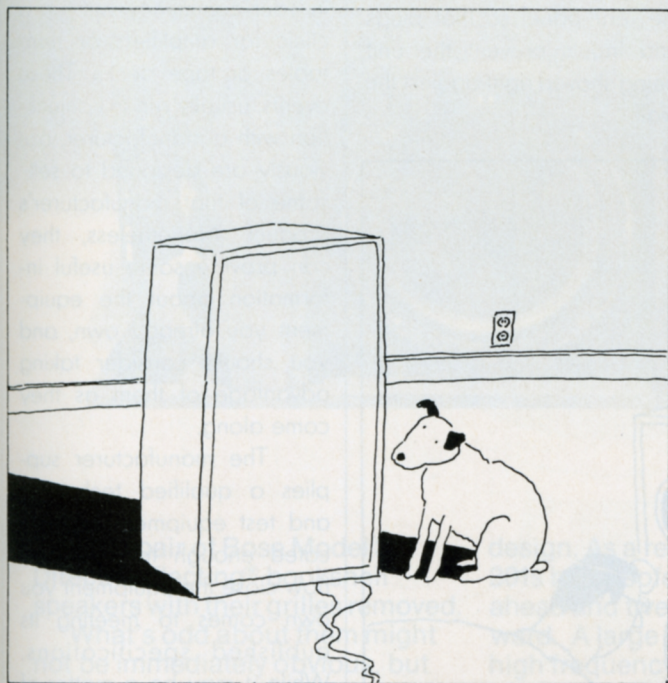
KEEPING A GOOD HEAD ON YOUR TAPE EQUIPMENT

The reason they put doors on those cassette wells is so dust and dirt won't fall into the mechanism. Most users shut the door—whether it's on top or on the front of their deck—when they're playing tapes, then leave the door open for weeks at a time when the deck isn't in use. The result is gunk which finds its way down into the belt and drive system and motor, eventually affecting performance. Even the dirt which stays in the well

can foul up your cassettes by finding its way into them and causing jamming.

Ventilation usually isn't much of a problem with cassette or cartridge tape decks, but it can become one with open-reel equipment. If your open-reel tape deck comes equipped with vents on top, along the back, or at the bottom, make sure that they're unobstructed whenever the unit is in use. Motors and transformers can become

use. Read the manual which came with your deck to see what the manufacturer suggests as a cleaning agent. A cleaner recommended by one manufacturer may be harmful to the heads or plastic parts of another brand of recorder, so it pays to follow the manufacturer's advice exactly. Most of the commercial cleaners on the market will produce satisfactory results on most machines, but it's better to be safe than sorry by



hot during prolonged periods of use, a fact which causes much of the need for open reel tape deck servicing. The more air you give your open reel deck, the less often it'll need the ministrations of a service man.

Regular cleaning of recorder heads and tape guides is not only a good idea—it's necessary if you want to keep getting top performance from your equipment. Professionals clean their recorders at the end of every work day, or after about eight hours of continuous use. You may not want to do it that often, but you should do so at least once a month, even if your recorder gets very little

choosing the right solvent to begin with. A tape lubricant applied to the recorder heads cuts down on friction and extends their life.

Demagnetizing your recorder's heads is a good idea at regular intervals—provided you know what you're doing. Home demagnetizers are available from audio dealers for \$10 or less, but in unskilled hands, they can do more harm than good. Have the dealer show you exactly how to use the demagnetizer before buying it. Clumsy use can scratch delicate (and expensive) recorder heads; can introduce a magnetic charge where none existed. If yours is a cassette or

cartridge unit, Ampex has an ingenious device which cleans and demagnetizes at the same time. These devices, built into cassette and cartridge shells, fit into your recorder and do their work while playing like any ordinary tape (except, of course, that there's no sound). Beware those cassette and cartridge cleaners which do their work by filing the oxide buildup off your heads (along with portions of the heads themselves) by means of an abrasive tape. Look instead for those containing fiber tape, like the Ampexes.

SPEAKERS SUPPORT THE BALANCE OF POWER

Being kind to your loudspeakers really is a very simple thing to do. Don't, for example, set wet glasses down on top of them. They don't like that. They behave badly, too, when their low-amperage diet is shut off or interfered with. This usually happens either at the terminals on the back of the speaker, or those on the back of the amplifier. One stray copper strand may be all that's necessary to short out the speaker, by touching the opposite screw or bared wire. Make sure that your speaker leads are anchored firmly at each end, and that there are no stray strands likely to cause problems.

Speaker leads, in fact, cause remarkably few problems. Under normal use, it should be ten years or more before the plastic coating cracks off the copper wire—and when it does, the voltage is low enough that nobody can get hurt by touching it. There's not even enough voltage flowing through the wire to cause any fire hazard. The

major problem with speaker leads is the possibility of tripping over them, which is why seasoned listeners make sure they're tacked down out of the way.

About the unkindest thing you can do to your speakers is to feed them sudden surges of high-frequency noise at very loud levels—such as the high-pitched whistle that comes from fast-forwarding a tape on a deck which doesn't lift it away from the heads, or the white noise between stations on an FM receiver without interstation muting. If the volume level is high enough and the copper wire in the speaker fine enough, you can produce enough heat to melt the voice coil.

Putting a foot through the speaker cone also is not considered very nice; and you should encourage guests not to allow their dogs to urinate on the speaker cone or speaker enclosure. Aside from these caveats, you have very little to fear from your loudspeakers.

KEEPING YOUR SHINY KNOBS SHINING

The best device ever for keeping your hi-fi components looking as if they just came out of the carton—the silicone-treated polishing cloth—is a victim of inflation. Once upon a time, every Japanese manufacturer of tuners, amplifiers, receivers, turntables and tape decks packed a polishing cloth with his equipment. In most cases, equipment purchasers threw them out with the rest of the packing material, without ever removing them from their plastic envelopes. When the manufacturers looked for ways of cutting costs, the cloths were among the first things to go.

The silicone cloth not only added a sheen to the wood or vinyl finishes, but removed fingerprints from tuning dials and metal escutcheons. Fortunately, silicone-treated cloths still are available in variety stores and housewares departments, although now you have to pay for them. As an all-around cleaning aid, it still can't be beat.

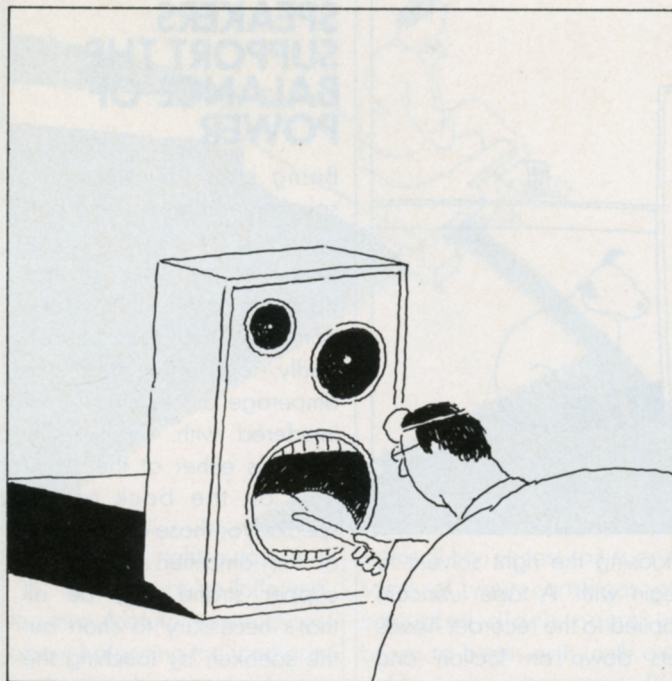
For cleaning plastic knobs, plexiglas tuning dials and metal front panels, there's still nothing better than warm water with just a drop or two of dishwashing detergent. To apply it, simply dip a cloth into the mixture, squeeze fairly dry, and scrub. The cloth is better than a sponge, because the latter can pick up gritty material which could scratch plastic.

Resist the temptation to use chemicals or commercial solvents on plastics or metal. The reason: some of them are harmful to acrylics and vinyl, and a few are harmful to you. Carbon tetrachloride, a favorite cleaner of the 1950s and 1960s, not only attacks acrylics, but does nasty things to your liver. Denatured alcohol is less harmful to both of you, but is also no more effective a cleaner than soap and water. Unless you know the chemical composition of a commercial preparation—and know it to be harmless to plastics—you're better off avoiding it.

When it comes to wood and simulated wood finishes, such as speaker enclosures, turntable bases, and tape deck, tuner or receiver wood enclosures, your favorite furniture polish will do the trick. My personal preference is for lemon oil polishes, particularly on semi-gloss finishes. Apply the polish as you would to any other piece of furniture,

and buff. Don't overpolish—usually a buffing of polish that's already on the wood is all that's necessary. When it comes to vinyl finishes styled to look like wood, there are two schools of thought. Some homemakers revert to the damp cloth dipped in detergent and water while others use a commercial polish like Pledge or Liquid Gold. The commercial polishes seem to me to give a higher gloss than soap and water, but they do require rubbing, and they seem to catch dust more readily than the alternative method.

kept unobstructed whenever the unit is operating. That means no empty record jackets, no magazines. And it means, if your unit is on a shelf, that the clearance above the unit and the next shelf should be what the manufacturer specifies—usually three inches or so. In order to insure adequate rear-panel and bottom ventilation, most manufacturers put feet on their unit to guarantee the latter, and design the rear panel so that plugs and inputs prevent the unit being shoved right against the wall.



TUNERS, RECEIVERS, AMPS CAN SUFFOCATE

What dirt is to records and tapes, heat is to your electronic components. Fail to provide adequate ventilation for your amplifier or receiver, and it will retaliate by demanding to be taken to the repair shop well in advance of its allotted time. Those vents on the back or top of your tuner, receiver or integrated amplifier are supposed to be

An amplifier reacts badly to a short circuit in a speaker line. In most cases, a fuse will blow out—and before replacing it, you'd better find out what caused the short in the first place, or the replacement will also blow out. Most common trouble spots are the leads at the speaker output terminals on the amplifier and at the terminals on the back of the speaker.

Obviously, you're not going to get all the sensitivity and signal-to-noise ratio you paid for in your tuner if you

don't connect it to a good antenna. The folded dipole which came with it may do the job temporarily, or if you don't have access to a good rooftop antenna. But it wasn't with that, that the manufacturer made his test measurements.

DEALERS CAN HELP YOU WITH FREE TESTING

Periodically, an audio dealer in your community will run a clinic for amplifiers or turntables or tape decks. These events, usually run in conjunction with a manufacturer, obviously are designed to sell some of that manufacturer's product. Nonetheless, they can provide some useful information about the equipment you already own, and you should consider taking advantage of them as they come along.

The manufacturer supplies a qualified technician and test equipment sophisticated enough to show just how close the equipment you own comes to meeting its published specifications. While it may be a matter of academic interest when the equipment is still new, the tests usually don't do you much good. But as equipment ages, the clinic detects signs of wear and age which usually can be repaired to bring the unit back up to peak operating efficiency.

Most clinics are no-obligation affairs. You're not obliged to buy anything. You're not even obliged to have the store make any repairs the clinical tests may indicate may be necessary. And in most cases, there is no charge for the service. That's why it's a good idea to watch out for the clinics and take advantage of them as they come along.

EASY HOME TROUBLE-SHOOTING

If you've followed our advice so far, you've gone a long way toward reducing the need for visits to the serviceman. Unless you're a qualified electronic technician yourself, however, you're never going to avoid them entirely. Even so, when it finally becomes evident that the services of an expert are necessary, there are some things you can do to make the bill slightly less painful.

The main one is to diagnose the trouble and track it down to the right component. The squawk (or lack of sound) may come out of the left speaker, but the chances are the trouble is much farther up the line. Let's assume your trouble is no sound or an annoying hum in the left channel. Does the problem occur regardless of program source, or can you limit it to the phono input (or FM or tape)?

If the problem is traceable to a single program source, you've automatically eliminated the speakers and the amplifier as a cause of the trouble, not to mention those program sources which function properly. But before you rip the offending program source out of your system, double-check by switching the leads from that component into your amplifier. Does the trouble jump channels? If so, then you're in the right neighborhood. If not—if the same channel remains dead or humming—the trouble is almost certainly in the jack in the back of your amplifier. If the trouble does jump channels, switch the leads at the other end of the patch cord. Does the trouble jump channels again? If so, all you have to do is replace the patch

cord and save yourself a trip to the repair shop. If not, and the component is a tape deck or tuner, you're in for a repair bill. If the trouble is in the turntable, try substituting another cartridge. If that does the trick, your troubles are over. If not, tell the repairman that you have reason to believe the problem lies in the leads which run between the cartridge and the terminals on the bottom of the turntable assembly (or the patch cords, if these are supplied).

Let's suppose, however, that you've absolved your program sources of guilt. The problem almost certainly lies in the amplifier or preamp, the speaker, or the leads which

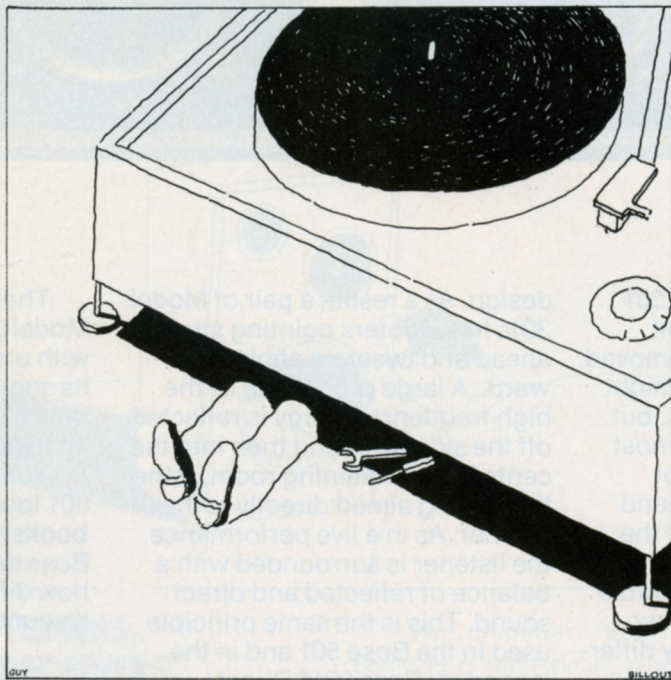
speaker, and you'll have to take it in for servicing. However, if all of your switching has led you to the inescapable conclusion that the trouble lies in one of the electronics components—the receiver, power amp, preamp or tuner—then you need take in only that component. Tell the repairman what you've been doing and what the results have been. If you don't, he'll have to do it himself—at the rate of \$15 to \$20 an hour.

If there's wow in your turntable, a cleaning of the inside rim, belt, idler wheel or other visible parts of the drive system may solve it. If not, or if the problem is wow in a tape deck, you're going to have to

or you get CB transmissions in your tape recordings. In this case, some part of your component system is acting as a tuner for a particular frequency, while the rest of it acts as a giant antenna. Eliminating RFI may be as simple as replacing your phono cartridge or rearranging your connecting wires; or as complex as having your receiver rewired. What makes it more complicated is that reception conditions at the repair shop almost certainly are different from those in your living room.

Therefore, it's better to try all the home remedies first. Try reversing your amplifier plug in the wall outlet. Make sure that the entire system is grounded—the screw which holds the face plate onto your wall socket makes a perfect ground. If the trouble persists, try moving your components around so that the wires are positioned differently in the room. Next, see if you can isolate the ghostly interference to a single component by following the procedure outlined above. If the single component is a phono cartridge, frequently the case, you may have to buy a new one. If it's the receiver or amplifier, also a common offender, you may be in for a much more sizable bill with no guarantee that the serviceman can cure the problem. Whenever you go to your serviceman with an RFI problem, tell him what steps you've taken already to solve it.

Unless you are a qualified electronic technician, you cannot save money by taking the cover off your receiver, tape deck, preamp, tuner or power amp. In fact, you may well cost yourself money by messing around with things you don't understand—and almost certainly will void your warranty. Leave skilled repair work to a skilled repairman.



connect them. To check the speakers, simply reverse speaker leads at the back of the amplifier. If the problem jumps channels, your speakers are guiltless. If not—if the same speaker remains silent or noisy—then switch speaker leads at the rear of each speaker, to be sure the trouble doesn't lie in them. If one speaker remains silent or sputtering during all of this, the problem is indeed in the

make a trip to the serviceman. Before doing so, however, try to assess your problem as precisely as possible. Does it occur only under certain circumstances? If so, what are they? The more information you give the technician, the lower your bill is likely to be.

Finally, there's the matter of radio frequency interference, or RFI. That's when a local disc jockey interrupts while you're playing records,

SOUND WAVE

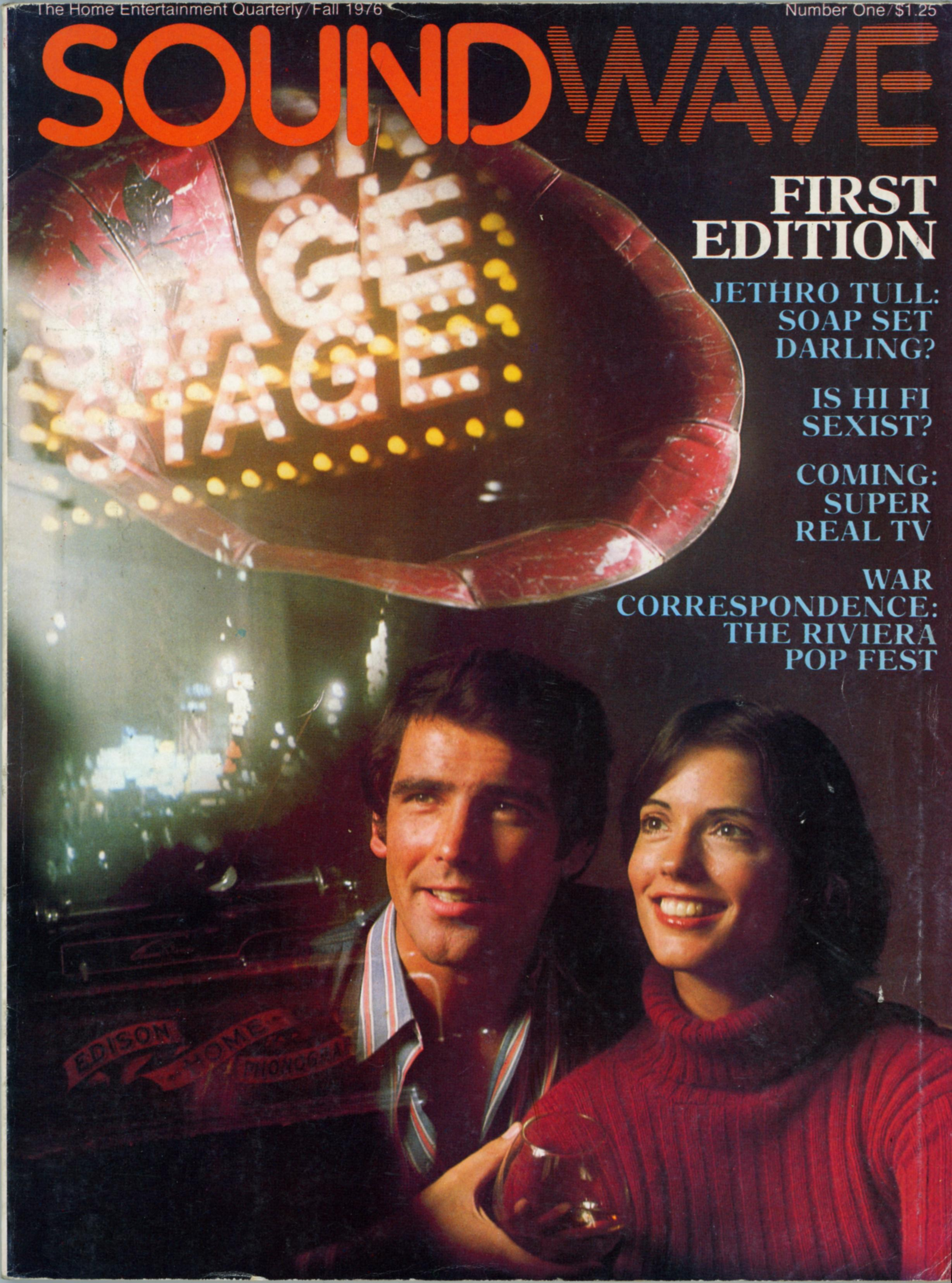
**FIRST
EDITION**

**JETHRO TULL:
SOAP SET
DARLING?**

**IS HI FI
SEXIST?**

**COMING:
SUPER
REAL TV**

**WAR
CORRESPONDENCE:
THE RIVIERA
POP FEST**



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SOUNDWAVE

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if you read this stuff in any other magazine, you
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It's a tradition here at SOUNDWAVE (since this is a first edition, we get to make up traditions as we go along) to use this space to tell you something about the writers, artists and photographers who entertain you in the magazine. Basically, we get to tell you about how they establish their literary credentials through bizarre behavior in public places. Like the time contributing editor Tom Glynn walked into a bar in lower Manhattan carrying a stainless steel kitchen sink. He set it on a table and John Mariani, our video editor, asked the waitress to fill it with beer and bring some straws.

But if the truth be known, the sink was in a box, and could have been anything at all, say, for example, a football scoreboard. And John and Tom were just a couple of Typical Americans stopping in for a quick brew after work.

It is also a tradition in first editions of anything for the management to make some super-heavy philosophic statement about how it intends to use the Medium Of Print to change the world.

But the world will change anyway. It always does, and there's not much any of us can do about it. It's because the world is changing so rapidly that there's any call for someone to do a magazine like this in the first place.

Technology is what's doing it. And the same technology that got us on the moon some years back is filtering down to us back here on earth in the form of gimcracks and gadgets and toys for our home entertainment. SOUNDWAVE is about high fidelity, video, things we haven't heard about yet, and anything you can personally choose to feed

The Pioneer 9191. Under \$450.[†] Either the specs are too high or the price is too low.

Here is a magnificent cassette deck with specifications that are beyond what our industry had been aware were possible; specs that surpass anything that a deck of this price, performance and quality has ever been able to come up to before. Unbelievably low wow and flutter; solenoid controls that operate at a touch with almost magical precision, and a unique, truly-visible horizontal front loading system by which the cassette is effortlessly set into place with two fingers, are only a few highlights.

Pioneer's new 9191 incorporates a cascade of features and innovations: automatic CrO₂ tape detector and indicator light; an illuminated panel scale that lets you see at a glance the amount of tape remaining on a cassette; and an advanced memory rewind circuit that permits quick and easy location of (and automatic re-start from) any point on a cassette tape. It also has two independent drive motors; including an electronically-controlled DC unit for recording and playback.

Our engineers took into consideration the many types of tapes available and included superior bias and equalization circuitry and switching (in addition to the the automatic CrO₂ detection system) so that the 9191's recording capability is



Unique, effortless front-loading system.



Selectable equalization and bias switches.

optimized for any kind of cassettes you want to use. And, of course, there's built-in Dolby B* to bring the 9191's S/N ratio up to 62 dB, even with standard tapes. We've also included separate mic/line mixing, and an extra pair of input and output jacks.

By now you realize that here is a cassette deck rivalling the performance of decks costing hundreds of dollars more; a deck whose controls make it respond faster than many reel-to-reel machines, and which offers greatly-extended frequency response and dynamic range. And it's the only front-loading, front-

control, stackable deck to have all the features we've mentioned.

But of all the ingredients that make up the 9191: performance, reliability, style and features, the most important of all is its value. We set out to build a cassette deck that was better, but less costly, than any deck built previously. We know we have succeeded. We know that you'll agree when you see and handle the Pioneer CT-F9191 at your Pioneer dealer.

CT-F9191 Specifications:

Frequency Response: Standard, LH tape: 25-16,000 Hz (35-13,000 Hz ± 3 dB); CrO₂ tape: 20-17,000 Hz (30-14,000 Hz ± 3 dB)

Signal-to-Noise Ratio: Dolby OFF: More than 52 dB; Dolby ON: More than 62 dB (Over 5,000 Hz, Standard and LH tapes) More than 66.5 dB over 5,000 Hz with CrO₂ tape

Harmonic Distortion: No more than 1.7% (OdB)

Wow and Flutter: No more than 0.07% (WRMS)

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